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E7.2-10323
CR-129581

MONITORING CHANGING GEOLOGIC FEATURES ALONG THE TEXAS GULF COAST

NTIS \$3.00

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1 December 1972

Type I Progress Report for Period 1 September - 31 October 1972

Prepared for:

Goddard Space Flight Center
Greenbelt, Maryland 20771

(E72-10323) MONITORING CHANGING GEOLOGIC
FEATURES ALONG THE TEXAS GULF COAST
Progress Report, 1 Sep. - 31 Oct. 1972
R.E. Hunter (Geological Survey) 1 Dec.
1972 3 p CSCL 08G G3/13 N73-14311
Unclas
00323

Publication authorized by the Director, U. S. Geological Survey

- a. Title: Monitoring Changing Geologic Features Along the Texas Gulf Coast

ERTS-A Proposal No.: SR 183

- b. GSFC ID No. of P.I.: IN 409

- c. Nothing to report.

- d. Remote-sensing and water-truth data collected during the period August 29-31 have been partly analyzed. Concentrations of suspended particulate matter were determined in about 100 samples of surface, mid-depth, and bottom water from the Gulf and Corpus Christi Bay. Variations in concentration from 0.3 to 1.0 mg/liter were detected in NASA color-infrared photography taken from an altitude of 60,000 feet and in ERTS-1 imagery in the wavelength band from 0.5 to 0.6 micrometers. Tabulation of drift-bottle and seabed-drifter data from the August 29 and October 4 releases is proceeding as returns are made; preliminary analysis indicates that drift was southward.

Patterns of turbidity during successive overpasses of ERTS-1 at 18-day intervals have varied considerably. Coverage at 1-day intervals is available for the limited areas of overlap and indicates appreciable variation during even this short time span.

- e. Water-truth observations, NASA aerial photography from an altitude of 60,000 feet, and ERTS-I imagery made off the South Texas coast on August 28-30, 1972 showed a mutually consistent pattern of water turbidity in the Gulf of Mexico. At the time of the measurements, plumes of turbid water were being formed by ebb-tidal discharges from the bays through tidal passes and were being diverted southward by the coastwise drift. For a distance of more than 36 miles south of Aransas Pass, high suspended-sediment concentrations were found in a zone extending from the shoreline to about 1.5 miles offshore and in another zone from 4 to 7 miles offshore. These turbid zones were separated from each other and bounded on the seaward side by zones of relatively clear water. The outer band of turbid water impinged on the shore about 75 miles south of Aransas Pass.

The occurrence of the bands of turbid and relatively clear water suggests the existence of large-scale helical circulation cells having axes almost parallel to shore with the outer turbid band probably being a zone of surface divergence and bottom-water upwelling. The impingement of a turbid water mass onto the shoreline suggests that some, and perhaps most, of the suspended sediment in nearshore waters may not have been stirred up from the nearshore sea floor but may have traveled long distances in the water mass, perhaps even having remained in suspension from the time of its entry into the Gulf tidal inlets such as Aransas Pass.

Category 5B.

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f. Nothing to report.

g. " " "

h. " " "

i. " " "

j. " " "

k. Not applicable.